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U.S. ENVIRONMENTAL PROTECTION AGENCY
NATIONAL EUTROPHICATION SURVEY

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REPORT

ON

MONROE RESERVOIR

BROWN AND MONROE COUNTIES

INDIANA

EPA REGION V

WORKING PAPER No. 336

WITH THE COOPERATION OF THE

INDIANA STATE BOARD OF HEALTH

AND THE

INDIANA NATIONAL GUARD

APRIL, 1976

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FOREWORD

The National Eutrophication Survey was initiated in 1972 in response to an Administration commitment to investigate the nationwide threat of accelerated eutrophication to fresh water lakes and reservoirs.

OBJECTIVES

The Survey was designed to develop, in conjunction with state environmental agencies, information on nutrient sources, concentrations, and impact on selected freshwater lakes as a basis for formulating comprehensive and coordinated national, regional, and state management practices relating to point-source discharge reduction and non-point source pollution abatement in lake watersheds.

ANALYTIC APPROACH

The mathematical and statistical procedures selected for the Survey's eutrophication analysis are based on related concepts that:

a. A generalized representation or model relating sources, concentrations, and impacts can be constructed.

b. By applying measurements of relevant parameters associated with lake degradation, the generalized model can be transformed into an operational representation of a lake, its drainage basin, and related nutrients.

c. With such a transformation, an assessment of the potential for eutrophication control can be made.

LAKE ANALYSIS

In this report, the first stage of evaluation of lake and watershed data collected from the study lake and its drainage basin is documented. The report is formatted to provide state environmental agencies with specific information for basin planning {§303(e)}, water quality criteria/standards review §303(c)}, clean lakes {§314(a,b)}, and water quality monitoring {§106 and §305(b)} activities mandated by the Federal Water Pollution Control Act Amendments of 1972.

Beyond the single lake analysis, broader based correlations between nutrient concentrations (and loading) and trophic condition are being made to advance the rationale and data base for refinement of nutrient water quality criteria for the Nation's fresh water lakes. Likewise, multivariate evaluations for the relationships between land use, nutrient export, and trophic condition, by lake class or use, are being developed to assist in the formulation of planning guidelines and policies by EPA and to augment plans implementation by the states.

ACKNOWLEDGMENT

The staff of the National Eutrophication Survey (Office of Research & Development, U. S. Environmental Protection Agency) expresses sincere appreciation to the Indiana State Board of Health for professional involvement, to the Indiana National Guard for conducting the tributary sampling phase of the Survey, and to those Indiana wastewater treatment plant operators who provided effluent samples and flow data.

The staff of the Division of Water Pollution Control, Indiana State Board of Health, provided invaluable lake documentation and counsel during the Survey, reviewed the preliminary reports, and provided critiques most useful in the preparation of this Working Paper series.

Major General Alfred F. Ahner, Adjutant General of Indiana, and Project Officers Lt. Colonel Charles B. Roberts (Retired) and Colonel Robert L. Sharp, who directed the volunteer efforts of the Indiana National Guardsmen, are also gratefully acknowledged for their assistance to the Survey.

NATIONAL EUTROPHICATION SURVEY

STUDY LAKES

STATE OF INDIANA

LAKE NAME	COUNTY
Bass	Starke
Cataract	Owen, Putnam
Crooked	Steuben
Dallas	LaGrange
Geist	Hamilton, Marion
Hamilton	Steuben
Hovey	Posey
James	Kosciusko
James	Steuben
Long	Steuben
Marsh	Steuben
Mississinewa	Grant, Miami, Wabash
Maxinkuckee	Marshall
Monroe	Brown, Monroe
Morse	Hamilton
Olin	LaGrange
Oliver	LaGrange
Pigeon	Steuben
Sylvan	Noble
Tippecanoe	Kosciusko
Versailles	Ripley
Wawassee	Kosciusko
Webster	Kosciusko
Westler	LaGrange
Whitewater	Union
Winona	Kosciusko
Witmer	LaGrange

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15. SUPPLEMENTARY NOTES
Prepared in cooperation with the U.S. Environmental Protection Agency, National Environmental Research Center, Las Vegas, Nevada 89114

16. ABSTRACT

Annual total phosphorus and total nitrogen loadings to the lake were estimated and subdivided according to either point or non-point source origin. An assessment of the lake's trophic condition and limiting nutrient is also provided. All data collected by the U.S.E.P.A. National Eutrophication Survey during the one year study of the lake and its tributaries are included in the report.

17 KEY WORDS AND DOCUMENT ANALYSIS

a. DESCRIPTORS	b. IDENTIFIERS/OPEN ENDED TERMS	c. COSATI Field/Group
eutrophication lakes nutrients phosphorus nitrogen loading		05B 05C

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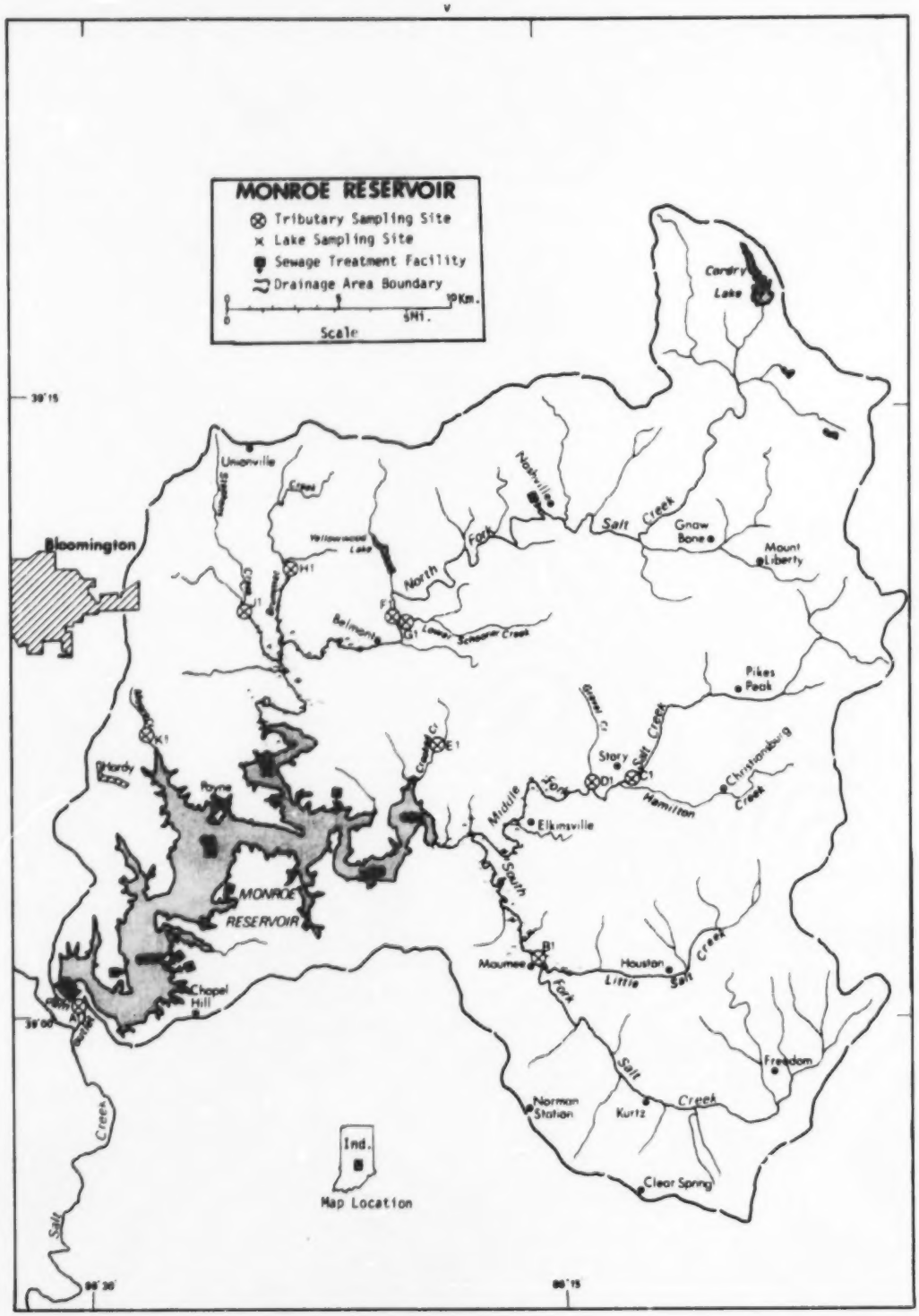
MONROE RESERVOIR
Tributary Sampling Site
Lake Sampling Site
Sewage Treatment Facility
Drainage Area Boundary
0
5Mi.
10Km.
Scale
Bloomington
Unionville
Yellowwood Lake
Nashville
Salt Creek
Gnaw Bone
Mount Liberty
North Fork
Lower Schooner Creek
Pikes Peak
Story
Christiansburg
Hamilton
Middle Fork
Elkinsville
South Fork
Maumee
Houston
Little Salt Creek
Freedom
Norman Station
Kurtz
Clear Spring
Hardy
Payne
MONROE RESERVOIR
Chapel Hill
Salt Creek
Ind.
Map Location
39°15
39°00
86°30
86°15

MONROE RESERVOIR

STORET NO. 1828

I. CONCLUSIONS

A. Trophic Condition:

Survey data indicate that Monroe Reservoir is eutrophic. Of the 27 Indiana water bodies sampled in 1973, the reservoir ranked eighth using a combination of six parameters as an index to overall trophic quality*. Eight of the lakes had less and one had the same median total phosphorus, eight had less median dissolved phosphorus and median inorganic nitrogen, seven had less mean chlorophyll a, and 12 had greater mean Secchi disc transparency. Marked depression or depletion of dissolved oxygen occurred in the hypolimnion during periods of thermal stratification.

Survey limnologists noted aquatic macrophytes in the North and Middle Fork embayments of the reservoir. Allanson et al. (1973) also reported macrophytes in these embayments.

B. Rate-Limiting Nutrient:

Algal assay results indicate that Monore Reservoir was phosphorus limited at the time the assay sample was collected (05/10/73). The reservoir data indicate phosphorus limitation at all sampling times.

C. Nutrient Controllability:

1. Point sources--The estimated point-source phosphorus load amounted to about 21% of the total reaching the reservoir during the sampling year.

* See Appendix A.

The estimated phosphorus loading during the Survey sampling year (0.28 g/m^2) is just equal to that proposed by Vollenweider (Vollenweider and Dillon, 1974) as an oligotrophic loading (see page 14). Although the loading may be in error to some degree because the phosphorus contributions of a number of small point sources discharging directly to the lake had to be estimated, the low phosphorus export rates of all of the tributaries (see page 14) are indicative of an overall low phosphorus loading during the sampling year.

The trophic condition of the reservoir in 1973 probably resulted from the nutrients contributed by the inundated land as well as from greater nutrient loadings in the six or so years of existence of the reservoir prior to the Indiana phosphate detergent ban of January, 1972, which resulted in an estimated 50% decrease in domestic wastewater phosphorus. The trophic condition of the reservoir should improve once a new phosphorus equilibrium is established, but this may take some time because the mean hydraulic retention time of the reservoir is 242 days.

2. Non-point sources--The phosphorus contribution of non-point sources accounted for about 79% of the total reaching the reservoir during the sampling year. The gaged tributaries contributed a combined total of 64.7% and ranged from 23.6% (N. Fk., Salt Creek) to 0.3% (Crooked Creek). The ungaged tributaries and immediate drainage were estimated to have contributed 8.2% of the total.

As noted above, the phosphorus export rates of the Monroe Reservoir tributaries were quite low as compared to the rates of other Indiana tributaries sampled in 1973. The low export rates would be expected because the drainages are almost entirely forested and are relatively sparsely-populated.

II. LAKE AND DRAINAGE BASIN CHARACTERISTICS†

A. Lake Morphometry††:

1. Surface area: 43.50 kilometers^2.
2. Mean depth: 5.3 meters.
3. Maximum depth: 22.2 meters.
4. Volume: 229.429 x 10^6 m^3.
5. Mean hydraulic retention time: 242 days.

B. Tributary and Outlet:
(See Appendix C for flow data)

1. Tributaries -

Name	Drainage area (km^2)*	Mean flow (m^3/sec)*
South Fk., Salt Creek	265.2	2.52
Middle Fk., Salt Creek	187.0	1.77
Gravel Creek	12.9	0.12
Crooked Creek	9.1	0.08
North Fk., Salt Creek	327.1	3.88
Lower Schooner Creek	31.1	0.29
Brummet Creek	36.0	0.34
Stephens Creek	38.5	0.36
Moore Creek	11.4	0.11
Minor tributaries & immediate drainage -	157.8	1.49
Totals	1,076.2	10.96

2. Outlet -

Salt Creek	1,119.7**	10.96**

C. Precipitation***:

1. Year of sampling: 114.9 centimeters.
2. Mean annual: 110.5 centimeters.

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† Table of metric conversions--Appendix B.
†† McCollam, 1975.
* For limits of accuracy, see Working Paper No. 175, "...Survey Methods, 1973-1976".
** Includes area of lake; outflow adjusted to equal inflow.
*** See Working Paper No. 175.

III. LAKE WATER QUALITY SUMMARY

Monroe Reservoir was sampled three times during the open-water season of 1973 by means of a pontoon-equipped Huey helicopter. Each time, samples for physical and chemical parameters were collected from a number of depths at six stations on the reservoir (see map, page v). During each visit, a single depth-integrated (4.6 m or near bottom to surface) sample was composited from the stations for phytoplankton identification and enumeration; and during the first visit, two 18.9-liter depth-integrated samples were composited for algal assays (stations 1, 2, and 3 were combined; and stations 4 and 5 were combined - station 6 was not sampled in May). Also each time, a depth-integrated sample was collected from each of the stations for chlorophyll a analysis. The maximum depths sampled were 18.6 meters at station 1, 16.5 meters at station 2, 13.7 meters at station 3, 7.9 meters at station 4, 8.5 meters at station 5, and 5.5 meters at station 6.

The sampling results are presented in full in Appendix D and are summarized in the following table.

A. SUMMARY OF PHYSICAL AND CHEMICAL CHARACTERISTICS FOR MONROE RESERVOIR
STORET CODE 1828

PARAMETER	1ST SAMPLING (5/10/73) 5 SITES RANGE	MEAN	MEDIAN	2ND SAMPLING (8/ 6/73) 6 SITES RANGE	MEAN	MEDIAN	3RD SAMPLING (10/10/73) 6 SITES RANGE	MEAN	MEDIAN
TEMP (C)	11.4 - 19.2	15.8	16.0	15.5 - 28.6	24.3	25.6	17.5 - 23.7	21.3	21.8
DISS OXY (MG/L)	4.3 - 9.8	7.9	8.8	0.0 - 16.2	3.8	1.6	0.0 - 7.8	2.9	2.2
CNDCTVY (MCROMO)	115. - 153.	135.	135.	95. - 144.	128.	130.	117. - 219.	141.	127.
PH (STAND UNITS)	7.2 - 8.1	7.6	7.6	6.6 - 9.0	7.3	6.9	6.6 - 7.4	7.0	7.0
TOT ALK (MG/L)	12. - 29.	23.	23.	23. - 66.	41.	35.	30. - 95.	47.	36.
TOT P (MG/L)	0.011 - 0.031	0.018	0.016	0.014 - 0.072	0.032	0.027	0.016 - 0.169	0.056	0.043
ORTHO P (MG/L)	0.002 - 0.012	0.005	0.004	0.003 - 0.023	0.008	0.006	0.007 - 0.054	0.016	0.011
NO2+NO3 (MG/L)	0.090 - 0.310	0.240	0.280	0.040 - 0.270	0.181	0.080	0.020 - 0.070	0.042	0.040
AMMONIA (MG/L)	0.040 - 0.210	0.064	0.050	0.050 - 0.980	0.389	0.130	0.100 - 2.680	0.693	0.220
KJEL N (MG/L)	0.280 - 0.800	0.389	0.400	0.400 - 1.700	0.884	0.600	0.500 - 3.780	1.317	0.950
INORG N (MG/L)	0.130 - 0.510	0.304	0.330	0.100 - 1.120	0.410	0.320	0.130 - 2.720	0.735	0.260
TOTAL N (MG/L)	0.390 - 0.890	0.629	0.620	0.450 - 1.840	0.986	0.770	0.530 - 3.740	1.359	0.975
CHLRPYL A (UG/L)	3.2 - 6.6	4.2	3.5	6.4 - 17.2	10.3	10.3	3.9 - 8.2	5.9	5.4
SECCHI (METERS)	1.3 - 2.7	2.2	2.4	0.4 - 2.7	1.3	1.3	0.6 - 2.7	1.3	0.9

B. Biological characteristics:

1. Phytoplankton -

Sampling Date	Dominant Genera	Algal Units per ml
05/10/73	1. Dinobryon sp.	1,092
	2. Fragilaria sp.	225
	3. Cryptomonas sp.	203
	4. Asterionella sp.	191
	5. Flagellates	101
	Other genera	350
	Total	2,162
08/06/73	1. Fragilaria sp.	1,424
	2. Melosira sp.	976
	3. Aphanizomenon sp.	165
	4. Lyngbya sp.	149
	5. Merismopedia sp.	99
	Other genera	494
	Total	3,307
10/10/73	1. Microcystis sp.	289
	2. Melosira sp.	184
	3. Anabaena sp.	145
	4. Flagellates	132
	5. Dactylococcopsis sp.	132
	Other genera	538
	Total	1,420

2. Chlorophyll a -

Sampling Date	Station Number	Chlorophyll a (µg/l)
05/10/73	1	3.5
	2	3.2
	3	3.2
	4	6.6
	5	4.4
	6	-

Sampling Date	Station Number	Chlorophyll a (µg/l)
08/06/73	1	17.2
	2	11.4
	3	10.0
	4	10.6
	5	6.4
	6	6.4
10/10/73	1	7.7
	2	6.2
	3	8.2
	4	3.9
	5	4.6
	6	4.6

C. Limiting Nutrient Study:

1. Autoclaved, filtered, and nutrient spiked -

a. Stations 1, 2, and 3 -

Spike (mg/l)	Ortho P Conc. (mg/l)	Inorganic N Conc. (mg/l)	Maximum yield (mg/l-dry wt.)
Control	0.005	0.319	0.1
0.050 P	0.055	0.319	8.6
0.050 P + 1.0 N	0.055	1.319	21.9
1.0 N	0.005	1.319	0.1

b. Stations 4 and 5 -

Spike (mg/l)	Ortho P Conc. (mg/l)	Inorganic N Conc. (mg/l)	Maximum yield (mg/l-dry wt.)
Control	0.010	0.213	0.1
0.050 P	0.060	0.213	4.9
0.050 P + 1.0 N	0.060	1.213	21.1
1.0 N	0.010	1.213	0.1

2. Discussion -

The control yields of the assay alga, Selenastrum capricornutum, indicate that the potential primary productivity

of Monroe Reservoir was low at the time the samples were collected (05/10/73). The results also indicate the reservoir was phosphorus limited at that time. Note the lack of increase in yield with the addition of nitrogen alone; but with the addition of orthophosphorus, alone or in combination with nitrogen, the yield increased markedly.

The reservoir data also indicate phosphorus limitation. The mean inorganic nitrogen to orthophosphorus ratios were 46 to 1 or greater at all sampling times, and phosphorus limitation would be expected.

IV. NUTRIENT LOADINGS
(See Appendix E for data)

For the determination of nutrient loadings, the Indiana National Guard collected monthly near-surface grab samples from each of the tributary sites indicated on the map (page v), except for the high runoff months of February and March when two samples were collected. Sampling was begun in June, 1973, and was completed in May, 1974.

Through an interagency agreement, stream flow estimates for the year of sampling and a "normalized" or average year were provided by the Indiana District Office of the U.S. Geological Survey for the tributary sites nearest the lake.

In this report, nutrient loads for sampled tributaries were determined by using a modification of a U.S. Geological Survey computer program for calculating stream loadings*. Nutrient loads shown are those measured minus point-source loads, if any.

Nutrient loads for unsampled "minor tributaries and immediate drainage" ("ZZ" of U.S.G.S.) were estimated using the means of the nutrient loads, in $kg/km^2/year$, at all stations, except F-1, and multiplying the means by the ZZ area in km^2.

The operators of the Nashville, Ransburg Boy Scout Camp, and Hardin Ridge Recreation Area wastewater treatment plants provided monthly effluent samples and corresponding flow data. The operators of the Fairfax State Recreation Area and the Paynetown Recreation Area treatment plants provided samples but did not furnish corresponding

* See Working Paper No. 175.

flow data, and the operator of the Hardin Monroe Division did not participate; nutrient loads from these sources were estimated at 0.567 kg P and 3.401 kg N/capita/year, and flows were estimated at 0.3785 m^3/capita/day. Note that the estimates of phosphorus loads from these sources and lakeshore septic tanks were reduced by 50% to adjust for the Indiana phosphate detergent ban instituted in January, 1972.

A. Waste Sources:

1. Known domestic* -

Name	Pop. Served	Treatment	Mean Flow (m^3/d)	Receiving Water
Nashville	200	act. sludge	567.8	N. Fk., Salt Creek
Fairfax State Rec. Area	465	act. sludge + pond	176.0**	Monroe Reservoir
Hardin Ridge Rec. Area	282	ext. aer. + P removal	121.1	Monore Reservoir
Ransburg BSA	?	?	56.8	Monroe Reservoir
Paynetown Rec. Area	465	act. sludge	176.0**	Monroe Reservoir
Hardin Monroe Divn.	200***	?	227.1**	Monroe Reservoir

2. Known industrial - None

* Treatment plant questionnaires.
** Design flow; population estimated on basis of flow (0.3785 m^3/capita/day).
*** Population adjusted for seasonal use.

B. Annual Total Phosphorus Loading - Average Year:

1. Inputs -

Source	kg P/ yr	% of total
a. Tributaries (non-point load) -		
South Fk., Salt Creek	2,705	22.6
Middle Fk., Salt Creek	1,450	12.1
Gravel Creek	90	0.8
Crooked Creek	35	0.3
North Fk., Salt Creek	2,830	23.6
Lower Schooner Creek	255	2.1
Brummet Creek	175	1.5
Stephens Creek	165	1.4
Moore Creek	50	0.4
b. Minor tributaries & immediate drainage (non-point load) -	985	8.2
c. Known domestic STP's -		
Nashville	1,810	15.1
Fairfax Rec. Area	265	2.2
Hardin Ridge Rec. Area	5	<0.1
Ransburg BSA	10	0.1
Paynestown Rec. Area	265	2.2
Hardin Monroe Divn.	115	1.0
d. Septic tanks* -	20	0.2
e. Known industrial - None	-	-
f. Direct precipitation** -	760	6.2
Total	11,990	100.0

2. Outputs -

Lake outlet - Salt Creek 6,695

3. Net annual P accumulation - 5,295 kg.

* Estimate based on 135 lakeshore dwellings; see Working Paper No. 175.
** See Working Paper No. 175.

C. Annual Total Nitrogen Loading - Average Year:

1. Inputs -

Source	kg N/ yr	% of total
a. Tributaries (non-point load) -		
South Fk., Salt Creek	78,070	20.0
Middle Fk., Salt Creek	53,915	13.8
Gravel Creek	2,855	0.7
Crooked Creek	2,435	0.6
North Fk., Salt Creek	109,440	28.0
Lower Schooner Creek	10,260	2.6
Brummet Creek	8,560	2.2
Stephens Creek	18,450	4.7
Moore Creek	2,750	0.7
b. Minor tributaries & immediate drainage (non-point load) -	46,510	11.9
c. Known domestic STP's -		
Nashville	5,340	1.4
Fairfax Rec. Area	1,580	0.4
Hardin Ridge Rec. Area	125	<0.1
Ransburg BSA	115	<0.1
Paynetown Rec. Area	1,580	0.4
Hardin Monroe Divn.	680	0.2
d. Septic tanks* -	1,440	0.4
e. Known industrial - None	-	-
f. Direct precipitation** -	46,975	12.0
Total	391,080	100.0

2. Outputs -

Lake outlet - Salt Creek 386,755

3. Net annual N accumulation - 4,325 kg.

* Estimate based on 135 lakeshore dwellings; see Working Paper No. 175.
** See Working Paper No. 175.

D. Mean Annual Non-point Nutrient Export by Subdrainage Area:

Tributary	kg P/km²/yr	kg N/km²/yr
South Fk., Salt Creek	10	294
Middle Fk., Salt Creek	8	288
Gravel Creek	7	221
Crooked Creek	4	268
North Fk., Salt Creek	9	335
Lower Schooner Creek	8	330
Brummet Creek	5	238
Stephens Creek	4	478
Moore Creek	4	241

E. Yearly Loads:

In the following table, the existing phosphorus loadings are compared to those proposed by Vollenweider (Vollenweider and Dillon, 1974). Essentially, his "dangerous" loading is one at which the receiving water would become eutrophic or remain eutrophic; his "permissible" loading is that which would result in the receiving water remaining oligotrophic or becoming oligotrophic if morphometry permitted. A mesotrophic loading would be considered one between "dangerous" and "permissible".

Note that Vollenweider's model may not be applicable to water bodies with short hydraulic retention times.

	Total Phosphorus		Total Nitrogen	
	Total	Accumulated	Total	Accumulated
grams/m²/yr	0.28	0.12	9.0	0.1

Vollenweider phosphorus loadings (g/m²/yr) based on mean depth and mean hydraulic retention time of Monroe Reservoir:

"Dangerous" (eutrophic loading)	0.56
"Permissible" (oligotrophic loading)	0.28

V. LITERATURE REVIEWED

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VI. APPENDICES

APPENDIX A

LAKE RANKINGS

LAKE DATA TO BE USED IN RANKINGS

LAKE CODE	LAKE NAME	MEDIAN TOTAL P	MEDIAN INORG N	500- MEAN SEC	MEAN CHLORA	15- MIN DO	MEDIAN DISS ORTHO P
1805	CATAWACT LAKE	0.056	1.660	466.667	10.744	15.000	0.013
1811	GEIST RESERVOIR	0.074	1.080	472.500	45.950	11.600	0.009
1817	JAMES LAKE	0.024	1.030	434.000	11.533	15.000	0.008
1827	MISSISSINEWA RESERVOIR	0.107	2.400	473.444	15.778	15.000	0.029
1828	MONROE RESERVOIR	0.025	0.325	438.823	6.947	15.000	0.007
1829	MORSE RESERVOIR	0.084	3.325	473.222	56.167	15.000	0.009
1836	WAWASEE LAKE	0.012	0.210	364.500	5.000	14.600	0.003
1837	WEBSTER LAKE	0.025	0.790	431.000	11.500	15.000	0.005
1839	WHITEWATER LAKE	0.084	1.620	470.167	33.083	15.000	0.012
1840	WINONA LAKE	0.035	1.250	444.667	11.211	15.000	0.011
1841	WESTLER LAKE	0.035	0.860	427.125	10.712	15.000	0.013
1842	WITMER LAKE	0.035	0.900	440.333	11.917	15.000	0.011
1843	LAKE MAXINKUCKEE	0.020	0.220	400.400	5.483	15.000	0.003
1844	TIPPECANOE LAKE	0.019	0.195	391.500	6.050	15.000	0.005
1845	DALLAS LAKE	0.029	0.830	413.333	10.067	15.000	0.014
1846	OLIN LAKE	0.012	1.460	403.333	4.867	14.900	0.003
1847	OLIVER LAKE	0.009	0.920	392.000	3.767	14.800	0.004
1848	SYLVAN LAKE	0.170	0.130	469.833	47.480	14.800	0.017
1849	HOVEY LAKE	0.062	1.050	489.333	84.267	7.600	0.024
1850	VERSAILLES LAKE	0.139	1.090	482.000	25.078	14.500	0.019
1851	BASS LAKE	0.040	0.250	471.375	29.367	7.000	0.012
1852	CROOKED LAKE	0.019	0.120	410.111	5.578	15.000	0.005
1853	LAKE JAMES	0.016	0.190	352.444	4.856	15.000	0.005
1854	LONG LAKE	0.204	1.920	442.667	16.100	15.000	0.150
1855	PIGEON LAKE	0.058	1.945	442.667	11.900	15.000	0.015
1856	MARSH LAKE	0.093	0.270	451.333	34.467	15.000	0.055
1857	HAMILTON LAKE	0.033	0.720	413.167	17.450	15.000	0.019

PERCENT OF LAKES WITH HIGHER VALUES (NUMBER OF LAKES WITH HIGHER VALUES)

LAKE CODE	LAKE NAME	MEDIAN TOTAL P	MEDIAN INORG N	500-MEAN SEC	MEAN CHLORA	15-MIN DO	MEDIAN DISS ORTHO P	INDEX NO
1805	CATARACT LAKE	37 (9)	15 (4)	31 (8)	62 (16)	35 (0)	37 (9)	217
1811	GEIST RESERVOIR	27 (7)	35 (9)	15 (4)	12 (3)	92 (24)	62 (16)	243
1817	JAMES LAKE	73 (19)	42 (11)	58 (15)	50 (13)	35 (0)	65 (17)	323
1827	MISSISSINEWA RESERVOIR	12 (3)	4 (1)	8 (2)	38 (10)	35 (0)	8 (2)	105
1828	MONROE RESERVOIR	67 (17)	69 (18)	54 (14)	73 (19)	35 (0)	69 (18)	367
1829	MORSE RESERVOIR	23 (6)	0 (0)	12 (3)	4 (1)	35 (0)	58 (15)	132
1836	WAWASEE LAKE	94 (24)	85 (22)	96 (25)	88 (23)	85 (22)	98 (25)	546
1837	WEBSTER LAKE	67 (17)	62 (16)	62 (16)	54 (14)	35 (0)	81 (21)	361
1839	WHITEWATER LAKE	19 (5)	19 (5)	23 (6)	19 (5)	35 (0)	42 (11)	157
1840	WINONA LAKE	50 (12)	27 (7)	38 (10)	58 (15)	35 (0)	52 (13)	260
1841	WESTLER LAKE	50 (12)	54 (14)	65 (17)	65 (17)	35 (0)	37 (9)	306
1842	WITMER LAKE	50 (12)	50 (13)	50 (13)	42 (11)	35 (0)	52 (13)	279
1843	LAKE MAXINKUCKEE	77 (20)	81 (21)	85 (22)	85 (22)	35 (0)	98 (25)	461
1844	TIPPECANOE LAKE	85 (22)	88 (23)	92 (24)	77 (20)	35 (0)	85 (22)	462
1845	DALLAS LAKE	62 (16)	58 (15)	69 (18)	69 (18)	35 (0)	31 (8)	324
1846	OLIN LAKE	94 (24)	23 (6)	81 (21)	92 (24)	73 (19)	92 (24)	455
1847	OLIVER LAKE	100 (26)	46 (12)	88 (23)	100 (26)	79 (20)	88 (23)	501
1848	SYLVAN LAKE	4 (1)	96 (25)	27 (7)	8 (2)	79 (20)	21 (6)	237
1849	HOVEY LAKE	31 (8)	38 (10)	0 (0)	0 (0)	96 (25)	12 (3)	177
1850	VERSAILLES LAKE	8 (2)	31 (8)	4 (1)	27 (7)	88 (23)	15 (4)	173
1851	BASS LAKE	42 (11)	77 (20)	19 (5)	23 (6)	100 (26)	46 (12)	307
1852	CROOKED LAKE	81 (21)	100 (26)	77 (20)	81 (21)	35 (0)	75 (19)	449
1853	LAKE JAMES	88 (23)	92 (24)	100 (26)	96 (25)	35 (0)	75 (19)	486
1854	LONG LAKE	0 (0)	12 (3)	44 (11)	35 (9)	35 (0)	0 (0)	126
1855	PIGEON LAKE	37 (9)	8 (2)	44 (11)	46 (12)	35 (0)	27 (7)	197
1856	MANSH LAKE	15 (4)	73 (19)	35 (9)	15 (4)	35 (0)	4 (1)	177
1857	HAMILTON LAKE	58 (15)	65 (17)	73 (19)	31 (8)	35 (0)	19 (5)	281

LAKES RANKED BY INDEX NOS.

RANK	LAKE CODE	LAKE NAME	INDEX NO
1	1836	WAWASEE LAKE	546
2	1847	OLIVER LAKE	501
3	1853	LAKE JAMES	486
4	1844	TIPPECANOE LAKE	462
5	1843	LAKE MAXINKUCKEE	461
6	1846	OLIN LAKE	455
7	1852	CROOKED LAKE	449
8	1828	MONROE RESERVOIR	367
9	1837	WEBSTER LAKE	361
10	1845	DALLAS LAKE	324
11	1817	JAMES LAKE	323
12	1851	BASS LAKE	307
13	1841	WESTLER LAKE	306
14	1857	HAMILTON LAKE	281
15	1842	WITHER LAKE	279
16	1840	WINONA LAKE	268
17	1811	GEIST RESERVOIR	243
18	1848	SYLVAN LAKE	237
19	1885	CATARACT LAKE	217
20	1855	PIGEON LAKE	197
21	1856	MARSH LAKE	177
22	1849	HOVEY LAKE	177
23	1850	VERSAILLES LAKE	173
24	1839	WHITEWATER LAKE	157
25	1829	MORSE RESERVOIR	132
26	1854	LONG LAKE	126
27	1827	MISSISSINEWA RESERVOIR	105

APPENDIX B

CONVERSION FACTORS

a)

CONVERSION FACTORS

Hectares x 2.471 = acres

Kilometers x 0.6214 = miles

Meters x 3.281 = feet

Cubic meters x 8.107×10^{-4} = acre/feet

Square kilometers x 0.3861 = square miles

Cubic meters/sec x 35.315 = cubic feet/sec

Centimeters x 0.3937 = inches

Kilograms x 2.205 = pounds

Kilograms/square kilometer x 5.711 = lbs/square mile

APPENDIX C

TRIBUTARY FLOW DATA

TRIBUTARY FLOW INFORMATION FOR INDIANA 03/29/76

LAKE CODE 1828 MONROE RESERVOIR

TOTAL DRAINAGE AREA OF LAKE(SQ KM) 1119.7

TRIBUTARY	SUB-DRAINAGE AREA(SQ KM)	NORMALIZED FLOWS(CMS) JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	MEAN
1828A1	1119.9	14.33	26.53	29.45	21.75	30.58	16.20	6.65	3.68	1.39	2.10	3.23	12.29	13.95
1828B1	265.2	3.40	3.85	5.30	5.04	3.31	2.47	1.53	0.63	0.56	0.62	1.31	2.32	2.52
1828C1	187.0	2.37	2.71	3.77	3.57	2.32	1.74	1.07	0.43	0.38	0.42	0.92	1.65	1.77
1828D1	12.9	0.147	0.184	0.269	0.246	0.159	0.122	0.071	0.022	0.022	0.022	0.062	0.122	0.128
1828E1	9.1	0.102	0.127	0.190	0.173	0.110	0.085	0.051	0.014	0.015	0.015	0.045	0.085	0.084
1828F1	327.1	7.25	6.43	8.07	7.96	6.57	2.63	1.46	0.34	0.32	0.35	1.36	3.96	3.88
1828G1	31.1	0.365	0.445	0.637	0.595	0.382	0.292	0.176	0.057	0.057	0.059	0.153	0.283	0.291
1828H1	36.0	0.428	0.515	0.736	0.688	0.442	0.337	0.204	0.068	0.065	0.068	0.176	0.328	0.337
1828J1	38.6	0.459	0.552	0.790	0.736	0.473	0.362	0.218	0.074	0.071	0.074	0.190	0.351	0.361
1828K1	11.4	0.130	0.161	0.238	0.218	0.139	0.108	0.062	0.019	0.019	0.020	0.057	0.108	0.106
1828ZZ	157.7	1.99	2.28	3.17	3.00	1.96	1.47	0.90	0.35	0.32	0.35	0.78	1.39	1.49

SUMMARY

TOTAL DRAINAGE AREA OF LAKE = 1119.7
SUM OF SUB-DRAINAGE AREAS = 1076.1

TOTAL FLOW IN = 131.99
TOTAL FLOW OUT = 168.18

MEAN MONTHLY FLOWS AND DAILY FLOWS(CMS)

TRIBUTARY	MONTH	YEAR	MEAN FLOW	DAY	FLOW	DAY	FLOW	DAY	FLOW
1828A1	6	73	38.879	9	6.116				
	7	73	15.744	11	1.869				
	8	73	2.713	14	1.444				
	9	73	1.422	5	1.444				
	10	73	1.398	4	1.388				
	11	73	1.393	8	1.388				
	12	73	4.417	18	1.444				
	2	74	37.010	9	52.669	24	20.841		
	3	74	32.791	9	29.733	23	52.952		
	4	74	32.026	6	5.720				
	5	74	11.667	5	20.728				
1828B1	6	73	4.248	9	2.265				
	7	73	3.511	11	0.963				
	8	73	0.510	14	1.642				
	9	73	0.110	5	0.079				
	10	73	0.102	4	0.057				
	11	73	1.557	8	0.068				
	12	73	4.502	18	0.595				
	1	74	7.362	16	5.862				
	2	74	3.936	9	4.248	24	5.862		
	3	74	7.362	9	3.256	23	4.870		
	4	74	7.249	6	3.511				
	5	74	6.060	5	2.435				

TRIBUTARY FLOW INFORMATION FOR INDIANA 03/29/76

LAKE CODE 1828 MONROE RESERVOIR

MEAN MONTHLY FLOWS AND DAILY FLOWS(CMS)

TRIBUTARY	MONTH	YEAR	MEAN FLOW	DAY	FLOW	DAY	FLOW	DAY	FLOW
1828C1	6	73	2.945	9	2.379				
	7	73	2.407	11	0.708				
	8	73	0.340	14	1.133				
	9	73	0.079	5	0.054				
	10	73	0.071	4	0.031				
	11	73	1.133	8	0.048				
	12	73	2.945	18	0.425				
	1	74	5.040	16	4.134				
	2	74	2.775	9	2.718	24	4.078		
	3	74	4.984	9	2.350	23	3.426		
	4	74	4.927	6	2.407				
	5	74	5.352	5	1.699				
1828D1	6	73	0.207	9	0.096				
	7	73	0.170	11	0.048				
	8	73	0.025	14	0.082				
	9	73	0.006	5	0.003				
	10	73	0.006	4	0.002				
	11	73	0.079	8	0.003				
	12	73	0.215	18	0.028				
	1	74	0.368	16	0.283				
	2	74	0.195	9	0.201	24	0.283		
	3	74	0.340	9	0.156	23	0.207		
	4	74	0.311	6	0.173				
	5	74	0.396	5	0.125				
1828E1	6	73	0.147	9	0.091				
	7	73	0.119	11	0.025				
	8	73	0.011	14	0.051				
	9	73	0.002	5	0.001				
	10	73	0.015	4	0.001				
	11	73	0.057	8	0.001				
	12	73	0.221	18	0.014				
	1	74	0.249	16	0.198				
	2	74	0.136	9	0.139	24	0.198		
	3	74	0.246	9	0.110	23	0.159		
	4	74	0.241	6	0.119				
	5	74	0.269	5	0.082				
1828F1	6	73	5.125	9	3.285				
	7	73	4.163	11	1.161				
	8	73	0.595	14	1.982				
	9	73	0.136	5	0.096				
	10	73	0.122	4	0.054				
	11	73	1.897	8	0.082				
	12	73	5.239	18	0.736				
	1	74	8.637	16	7.023				
	2	74	4.814	9	4.984	24	6.994		
	3	74	8.588	9	3.988	23	5.805		
	4	74	8.495	6	4.134				
	5	74	9.288	5	2.917				

TRIBUTARY FLOW INFORMATION FOR INDIANA 03/29/76

LAKE CODE 1828 MONROE RESERVOIR

MEAN MONTHLY FLOWS AND DAILY FLOWS(CMS)

TRIBUTARY	MONTH	YEAR	MEAN FLOW	DAY	FLOW	DAY	FLOW	DAY	FLOW
1828G1	6	73	0.283	9	0.284				
	7	73	0.102	11	0.011				
	8	73	0.003	14	0.011				
	9	73	0.001	5	0.001				
	10	73	0.000	4	0.000				
	11	73	0.000	8	0.000				
	12	73	0.510	18	0.059				
	1	74	0.793	16	0.623				
	2	74	0.538	9	0.566	24	0.821		
	3	74	0.991	9	0.510	23	0.680		
	4	74	0.680	6	0.396				
	5	74	1.019	5	0.261				
1828H1	6	73	0.595	9	0.227				
	7	73	0.481	11	0.133				
	8	73	0.065	14	0.227				
	9	73	0.001	5	0.001				
	10	73	0.000	4	0.001				
	11	73	0.212	8	0.003				
	12	73	0.595	18	0.000				
	1	74	1.019	16	0.934				
	2	74	0.566	9	0.566	24	0.821		
	3	74	1.019	9	0.453	23	0.765		
	4	74	0.934	6	0.481				
	5	74	1.104	5	0.340				
1828J1	6	73	0.357	9	0.396				
	7	73	0.125	11	0.025				
	8	73	0.014	14	0.025				
	9	73	0.002	5	0.002				
	10	73	0.000	4	0.000				
	11	73	0.252	8	0.001				
	12	73	0.651	18	0.076				
	1	74	0.991	16	0.821				
	2	74	0.680	9	0.736	24	1.048		
	3	74	1.218	9	0.623	23	0.850		
	4	74	0.906	6	0.510				
	5	74	1.246	5	0.340				
1828K1	6	73	0.110	9	0.119				
	7	73	0.040	11	0.008				
	8	73	0.006	14	0.008				
	9	73	0.001	5	0.001				
	10	73	0.000	4	0.000				
	11	73	0.065	8	0.000				
	12	73	0.193	18	0.023				
	1	74	0.283	16	0.244				
	2	74	0.204	9	0.221	24	0.311		
	3	74	0.368	9	0.187	23	0.255		
	4	74	0.269	6	0.150				
	5	74	0.368	5	0.099				

TRIBUTARY FLOW INFORMATION FOR INDIANA 03/29/76

LAKE CODE 1828 MONROE RESERVOIR

MEAN MONTHLY FLOWS AND DAILY FLOWS(CMS)

TRIBUTARY	MONTH	YEAR	MEAN FLOW	DAY	FLOW	DAY	FLOW	DAY	FLOW
1828ZZ	6	73	2.560	9	1.642				
	7	73	2.112	11	0.595				
	8	73	0.306	14	0.991				
	9	73	0.068	5	0.048				
	10	73	0.062	4	0.028				
	11	73	0.943	8	0.040				
	12	73	2.582	18	0.368				
	1	74	4.417	16	3.568				
	2	74	2.379	9	2.492	24	3.568		
	3	74	4.389	9	1.954	23	2.945		
	4	74	4.304	6	2.095				
	5	74	4.757	5	1.472				

APPENDIX D

PHYSICAL and CHEMICAL DATA

STORET RETRIEVAL DATE 76/03/30

182801
39 00 31.0 086 30 57.0 3
MONROE RESERVOIR
18105 INDIANA

051091

11EPALES 2111202
0065 FEET DEPTH CLASS 00

DATE FROM TO	TIME OF DAY	DEPTH FEET	00010 WATER TEMP CENT	00300 DO MG/L	00077 TRANSP SECCHI INCHES	00094 CNDUCTVY FIELD MICROMHO	00400 PH SU	00410 T ALK CACO3 MG/L	00610 NH3-N TOTAL MG/L	00625 TOT KJEL N MG/L	00630 NO2&NO3 N-TOTAL MG/L	00671 PHOS-DIS ORTHO MG/L P
73/05/10	10 20	0000	15.8		108	140	7.60	23	0.040	0.400	0.310	0.006
	10 20	0006	15.7	9.5		140	7.60	22	0.040	0.400	0.300	0.005
	10 20	0015	15.1	9.8		140	7.60	24	0.040	0.280	0.290	0.007
	10 20	0025	15.0	8.8		140	7.60	24	0.050	0.280	0.290	0.007
	10 20	0040	13.9	7.8		140	7.50	27	0.080	0.280K	0.290	0.004
	10 20	0050	12.7	4.6		150	7.30	26	0.120	0.300	0.280	0.004
	10 20	0061	11.4	4.3		153	7.20	29	0.210	0.340	0.300	0.006
73/08/06	16 05	0000	28.4		88	130	8.30	35	0.100	0.700	0.070	0.007
	16 05	0005	27.1	8.2		126	7.90	33	0.060	0.600	0.060	0.006
	16 05	0015	26.6	16.2		125	6.70	35	0.090	0.600	0.060	0.005
	16 05	0025	21.6	0.2		134	6.80	49	0.370	0.800	0.050	0.005
	16 05	0035	17.4	0.0		136	6.80	63	0.840	1.500	0.100	0.010
	16 05	0048	15.5	0.2		132	6.80	66	0.980	1.700	0.140	0.012
73/10/10	13 40	0000	23.7		108	128	7.40	39	0.100	1.000	0.060	0.012
	13 40	0005	23.2	7.0		124	7.10	36	0.120	0.600	0.060	0.013
	13 40	0015	22.6	4.6		124	7.00	37	0.150	0.600	0.070	0.011
	13 40	0025	21.9	0.1		157	7.00	62	0.770	0.900	0.030	0.011
	13 40	0035	18.7	0.0		195	6.90	93	2.100	2.700	0.050	0.023
	13 40	0046	17.5	0.0		219	6.90	92	2.440	3.200	0.050	0.031

DATE FROM TO	TIME OF DAY	DEPTH FEET	00665 PHOS-TOT MG/L P	32217 CHLRPHYL A UG/L
73/05/10	10 20	0000	0.011	3.5
	10 20	0006	0.013	
	10 20	0015	0.014	
	10 20	0025	0.020	
	10 20	0040	0.016	
	10 20	0050	0.019	
	10 20	0061	0.022	
73/08/06	16 05	0000	0.014	17.2
	16 05	0005	0.023	
	16 05	0015	0.016	
	16 05	0025	0.018	
	16 05	0035	0.027	
	16 05	0048	0.036	
73/10/10	13 40	0000	0.016	7.7
	13 40	0005	0.021	
	13 40	0015	0.019	
	13 40	0025	0.031	
	13 40	0035	0.09?	
	13 40	0046	0.169	

K VALUE KNOWN TO BE LESS THAN INDICATED

STORET RETRIEVAL DATE 76/03/30

182802
39 01 26.0 086 27 54.0 3
MONROE RESERVOIR
18105 INDIANA

051891

11EPALES 2111202
0058 FEET DEPTH CLASS 00

DATE FROM TO	TIME OF DAY	DEPTH FEET	00010 WATER TEMP CENT	00300 DO MG/L	00077 TRANSP SECCHI INCHES	00094 CNDUCTVY FIELD MICROMHO	00400 PH SU	00410 T ALK CACO3 MG/L	00610 NH3-N TOTAL MG/L	00625 TOT KJEL N MG/L	00630 NO2&NO3 N-TOTAL MG/L	00671 PHOS-DIS ORTHO MG/L P
73/05/10	10 45	0000	16.4		100	140	7.60	21	0.050	0.400	0.300	0.005
	10 45	0006	16.4	9.6		135	7.60	22	0.040	0.300	0.300	0.004
	10 45	0015	16.3	9.6		135	7.60	24	0.040	0.300	0.300	0.003
	10 45	0025	16.0	9.5		135	7.60	24	0.040	0.300	0.290	0.004
	10 45	0040	14.8	8.4		135	7.60	22	0.060	0.300	0.290	0.008
	10 45	0054	12.2	4.5		145	7.50	26	0.120	0.400	0.280	0.005
73/08/06	15 35	0000	28.6		105	130	8.90	33	0.060	0.500	0.040	0.003
	15 35	0005	28.5	8.8		130	8.40	32	0.060	0.400	0.060	0.004
	15 35	0015	26.5	7.2		122	7.10	34	0.050	0.400	0.050	0.003
	15 35	0025	21.9	0.2		144	6.90	62	0.650	1.200	0.120	0.006
	15 35	0041	16.8	0.4		135	6.90	62	0.910	1.600	0.110	0.017
73/10/10	13 15	0000	23.2		70	127	7.10	30	0.100	0.800	0.030	0.011
	13 15	0005	22.5	6.0		125	7.00	30	0.130	0.500	0.040	0.011
	13 15	0015	22.4	5.6		124	6.90	30	0.170	0.600	0.040	0.011
	13 15	0025	21.9	1.6		144	6.80	48	0.650	1.000	0.020	0.013
	13 15	0035	18.8	0.0		184	7.00	86	2.090	2.800	0.040	0.041
	13 15	0040	18.2	0.1		188	7.00	95	2.380	3.600	0.040	0.054

DATE FROM TO	TIME OF DAY	DEPTH FEET	00665 PHOS-TOT MG/L P	32217 CHLRPHYL A UG/L
73/05/10	10 45	0000	0.012	3.2
	10 45	0006	0.013	
	10 45	0015	0.029	
	10 45	0025	0.013	
	10 45	0040	0.013	
	10 45	0054	0.015	
73/08/06	15 35	0000	0.021	11.4
	15 35	0005	0.016	
	15 35	0015	0.017	
	15 35	0025	0.028	
	15 35	0041	0.028	
73/10/10	13 15	0000	0.029	6.2
	13 15	0005	0.025	
	13 15	0015	0.026	
	13 15	0025	0.051	
	13 15	0035	0.104	
	13 15	0040	0.132	

STORET RETRIEVAL DATE 76/03/30

182803
39 04 02.0 086 26 22.0 3
MONROE RESERVOIR
18105 INDIANA

051891

11EPALES 2111202
0050 FEET DEPTH CLASS 00

DATE FROM TO	TIME OF DAY	DEPTH FEET	00010 WATER TEMP CENT	00300 DO MG/L	00077 TRANSP SECCHI INCHES	00094 CNDUCTVY FIELD MICROMHO	00400 PH SU	00410 T ALK CACO3 MG/L	00610 NH3-N TOTAL MG/L	00625 TOT KJEL N MG/L	00630 NO2&NO3 N-TOTAL MG/L	00671 PHOS-DIS ORTHO MG/L P
73/05/10	12 50	0000	16.6		96	140	7.60	23	0.040	0.600	0.280	0.006
	12 50	0006	16.6	8.8		140	7.70	21	0.040	0.400	0.280	0.012
	12 50	0015	16.5	9.4		140	7.70	24	0.050	0.400	0.290	0.004
	12 50	0024	16.3	9.3		140	7.70	23	0.050	0.400	0.280	0.006
	12 50	0032	16.0	8.9		135	7.70	23	0.060	0.300	0.280	0.008
	12 50	0045	15.2	8.4		135	7.60	22	0.060	0.300	0.270	0.005
73/08/06	15 10	0000	28.5		72	126	8.90	31	0.080	0.500	0.080	0.005
	15 10	0005	27.6	9.6		124	8.20	28	0.060	0.400	0.070	0.005
	15 10	0015	25.6	3.4		120	6.60	36	0.200	0.500	0.120	0.009
	15 10	0025	22.3	0.2		124	6.90	42	0.550	1.100	0.100	0.007
	15 10	0034	18.0	0.0		141	6.90	60	0.830	1.400	0.070	0.005
73/10/10	12 45	0000	23.1		42	125	7.40	36	0.120	0.600	0.030	0.008
	12 45	0005	22.6	7.8		125	7.30	36	0.110	0.500	0.030	0.010
	12 45	0015	22.5	5.0		127	7.10	33	0.170	0.800	0.040	0.012
	12 45	0025	21.8	0.2		135	6.80	39	0.550	1.100	0.030	0.010
	12 45	0035	19.2	0.0		189	7.00	82	2.680	3.700	0.040	0.032

DATE FROM TO	TIME OF DAY	DEPTH FEET	00665 PHOS-TOT MG/L P	32217 CHLRPHYL A UG/L
73/05/10	12 50	0000	0.015	3.2
	12 50	0006	0.014	
	12 50	0015	0.015	
	12 50	0024	0.015	
	12 50	0032	0.014	
	12 50	0045	0.018	
73/08/06	15 10	0000	0.024	10.0
	15 10	0005	0.019	
	15 10	0015	0.029	
	15 10	0025	0.034	
	15 10	0034	0.027	
73/10/10	12 45	0000	0.030	8.2
	12 45	0005	0.025	
	12 45	0015	0.035	
	12 45	0025	0.043	
	12 45	0035	0.121	

STORET RETRIEVAL DATE 76/03/30

182804
39 06 02.0 086 24 28.0 3
MONROE RESERVOIR
18105 INDIANA

051891

11EPALES 2111202
0030 FEET DEPTH CLASS 00

DATE FROM TO	TIME OF DAY	DEPTH FEET	00010 WATER TEMP CENT	00300 DO MG/L	00077 TRANSP SECCHI INCHES	00094 CNDUCTVY FIELD MICROMHO	00400 PH SU	00410 T ALK CACO3 MG/L	00610 NH3-N TOTAL MG/L	00625 TOT KJEL N MG/L	00630 NO2&NO3 N-TOTAL MG/L	00671 PHOS-DIS ORTHO MG/L P
73/05/10	13	35 0000	18.7		60	125	7.60	23	0.040	0.500	0.120	0.003
	13	35 0006	18.5	9.3		125	7.60	12	0.040	0.500	0.140	0.004
	13	35 0015	16.9	7.7		125	7.60	27	0.050	0.500	0.120	0.004
	13	35 0026	15.9	6.8		130	7.50	26	0.070	0.500	0.150	0.004
73/08/06	14	45 0000	27.7		31	139	9.00	35	0.060	0.500	0.050	0.007
	14	45 0005	26.1	7.0		136	7.00	39	0.080	0.400	0.080	0.006
	14	45 0010	25.3	2.2		138	6.70	41	0.090	0.400	0.090	0.006
	14	45 0018	23.9	0.6		144	6.60	42	0.190	0.700	0.140	0.005
73/10/10	12	20 0000	22.3		24	120	7.10	30	0.160	1.100	0.040	0.007
	12	20 0005	21.2	4.8		119	6.80	30	0.220	0.800	0.040	0.007
	12	20 0010	20.9	4.0		117	6.70	31	0.220	0.700	0.040	0.008
	12	20 0018	20.5	2.2		118	6.60	33	0.340	0.700	0.050	0.011

DATE FROM TO	TIME OF DAY	DEPTH FEET	00665 PHOS-TOT MG/L P	32217 CHLRPHYL A UG/L
73/05/10	13	35 0000	0.018	6.6
	13	35 0006	0.024	
	13	35 0015	0.020	
	13	35 0026	0.021	
73/08/06	14	45 0000	0.025	10.6
	14	45 0005	0.045	
	14	45 0010	0.072	
	14	45 0018	0.051	
73/10/10	12	20 0000	0.051	3.9
	12	20 0005	0.035	
	12	20 0010	0.043	
	12	20 0018	0.067	

STORET RETRIEVAL DATE 76/03/30

182805
39 04 38.0 086 19 34.0 3
MONROE RESERVOIR
18013 INDIANA

051891

11EPALES 2111202
0032 FEET DEPTH CLASS 00

DATE FROM TO	TIME OF DAY	DEPTH FEET	00010 WATER TEMP CENT	00300 DO MG/L	00077 TRANSP SECCHI INCHES	00094 CNDUCTVY FIELD MICROMHO	00400 PH SU	00410 T ALK CACO3 MG/L	00610 NH3-N TOTAL MG/L	00625 TOT KJEL N MG/L	00630 NO2&NO3 N-TOTAL MG/L	00671 PHOS-DIS ORTHO MG/L P
73/05/10	14 00	0000	19.2		52	120	8.10	21	0.040	0.300	0.090	0.002
	14 00	0006	18.3	9.1		115	7.90	19	0.050	0.800	0.090	0.004
	14 00	0015	15.7	4.7		125	7.50	23	0.120	0.500	0.130	0.003
	14 00	0028	15.1	4.9		125	7.40	19	0.100	0.500	0.140	0.003
73/08/06	14 25	0000			14							
73/10/10	12 00	0000			28							

DATE FROM TO	TIME OF DAY	DEPTH FEET	00665 PHOS-TOT MG/L P	32217 CHLRPHYL A UG/L
73/05/10	14 00	0000	0.021	4.4
	14 00	0006	0.031	
	14 00	0015	0.021	
	14 00	0028	0.025	
73/08/06	14 25	0000		6.4
73/10/10	12 00	0000		4.6

STORET RETRIEVAL DATE 76/03/30

182806
39 03 18.0 086 21 15.0 3
MONROE RESERVOIR
18013 INDIANA

051891

11EPALES 2111202
0022 FEET DEPTH CLASS 00

DATE FROM TO	TIME OF DAY	DEPTH FEET	00010 WATER TEMP CENT	00300 DO MG/L	00077 TRANSP SECCHI INCHES	00094 CNDUCTVY FIELD MICROMHO	00400 PH SU	00410 T ALK CACO3 MG/L	00610 NH3-N TOTAL MG/L	00625 TOT KJEL N MG/L	00630 NO2&NO3 N-TOTAL MG/L	00671 PHOS-DIS ORTHO MG/L P
73/08/06	14 25	0000	26.2		14	95	7.10	26	0.130	1.000	0.190	0.007
	14 25	0005	25.2	2.6		100	6.60	23	0.330	1.000	0.210	0.023
	14 25	0018	23.7	1.0		117	6.60	31	0.340	0.600	0.270	0.013
73/10/10	12 00	0000	21.8		28	127	7.00	37	0.200	1.200	0.050	0.014
	12 00	0005	20.7	3.2		126	6.80	33	0.240	1.000	0.040	0.009
	12 00	0011	20.4	2.2		126	6.80	34	0.350	1.100	0.050	0.009

DATE FROM TO	TIME OF DAY	DEPTH FEET	00665 PHOS-TOT MG/L P	32217 CHLRPHYL A UG/L
73/08/06	14 25	0000	0.059	6.4
	14 25	0005	0.050	
	14 25	0018	0.056	
73/10/10	12 00	0000	0.061	4.6
	12 00	0005	0.046	
	12 00	0011	0.081	

APPENDIX E

TRIBUTARY and WASTEWATER TREATMENT PLANT DATA

STORET RETRIEVAL DATE 76/03/30

1828A1
39 00 16.0 086 30 30.0 4
SALT CREEK
18 7.5 CLEAR CREEK
O/MONROE RES 051891
BANK BELO DAM AT GAGING STATION
11EPALES 2111204
0000 FEET DEPTH CLASS 00

DATE FROM TO	TIME OF DAY	DEPTH FEET	00630 NO2&NO3 N-TOTAL MG/L	00625 TOT KJEL N MG/L	00610 NH3-N TOTAL MG/L	00671 PHOS-DIS ORTHO MG/L P	00665 PHOS-TOT MG/L P
73/06/09	14	25	0.210	0.500	0.087	0.005K	0.010
73/07/11	15	05	0.042	1.400	0.059	0.006	0.015
73/08/14	10	03	0.018	0.630	0.180	0.014	0.025
73/09/05	09	00	0.010K	0.660	0.140	0.005K	0.020
73/10/04	14	34	0.028	0.800	0.340	0.006	0.025
73/11/08	12	30	0.068	0.500	0.168	0.005K	0.010
73/12/18	10	00	0.148	0.300	0.064	0.005K	0.005K
74/02/09	15	15	0.252	0.500	0.055	0.005K	0.005
74/02/24	15	30	0.340	0.600	0.040	0.010	0.015
74/03/09	15	15	0.336	0.200	0.015	0.005	0.035
74/03/23	14	30	0.384	0.300	0.012	0.005K	0.010
74/04/06	14	30	0.360	0.600	0.040	0.005K	0.015
74/05/05	11	00	0.312	0.200	0.030	0.005	0.005

K VALUE KNOWN TO BE
LESS THAN INDICATED

STORET RETRIEVAL DATE 76/03/30

182881
39 01 20.0 086 15 37.0 4
S FORK SALT CR
18 7.5 ELKINSVILLE
1/MONROE RES 051891
RD BRDG JUST NE OF MAUMEE
11EPALES 2111204
0000 FEET DEPTH CLASS 00

DATE FROM TO	TIME OF DAY	DEPTH FEET	00630 NO2&NO3 N-TOTAL MG/L	00625 TOT KJEL N MG/L	00610 NH3-N TOTAL MG/L	00671 PHOS-DIS ORTHO MG/L P	00665 PHOS-TOT MG/L P
73/06/09	15 55		0.480	0.940	0.110	0.007	0.030
73/07/11	11 05		0.800	1.200	0.336	0.026	
73/08/14	11 40		0.220	0.370	0.075	0.008	0.030
73/09/05	14 50		0.023	0.750	0.055	0.005K	0.030
73/10/04	13 45		0.022	1.100	0.198	0.014	0.050
73/11/08	12 00		0.010K	0.550	0.030	0.024	
73/12/18	11 30		0.830	0.200	0.052	0.005K	0.015
74/01/16	10 30		0.680	0.500	0.104	0.010	0.080
74/02/09	11 00		0.588	0.300	0.047	0.005	0.005
74/02/24	14 35		0.390	0.300	0.040	0.005	0.035
74/03/09	10 35		0.552	0.400	0.060	0.010	0.070
74/03/23	11 00		0.560	0.200	0.020	0.005K	0.015
74/04/06	10 55		0.450	0.300	0.070	0.005K	0.025
74/05/05	14 15		0.240	0.200	0.035	0.005	0.020

K VALUE KNOWN TO BE
LESS THAN INDICATED

STORET RETRIEVAL DATE 76/03/30

1828C1
39 05 35.0 086 12 30.0 4
MIDDLE FORK SALT CR
18 7.5 STORY
I/MONROE RES 051891
ST HWY 135 BRDG .5 MI SE OF STORY
11EPALES 2111204
0000 FEET DEPTH CLASS 00

DATE FROM TO	TIME OF DAY	DEPTH FEET	00630 NO2&NO3 N-TOTAL MG/L	00625 TOT KJEL N MG/L	00610 NH3-N TOTAL MG/L	00671 PHOS-DIS ORTHO MG/L P	00665 PHOS-TOT MG/L P
73/06/09	15	20	1.060	0.560	0.054	0.005K	0.020
73/07/11	10	20	0.740	0.300	0.252	0.007	0.015
73/08/14	11	10	0.078	0.460	0.088	0.007	0.030
73/09/05	14	10	0.010K	0.980	0.034		0.055
73/10/04	13	10	0.011	0.660	0.075	0.007	0.035
73/11/08	11	27	0.010K	0.550	0.032	0.021	0.040
73/12/18	11	00	0.590	0.800	0.050	0.005K	0.005K
74/01/16	09	55	0.450	0.200	0.044	0.008	0.025
74/02/09	10	30	0.520	0.300	0.040	0.005K	0.005
74/02/24	14	00	0.440	1.600	0.060	0.005	0.030
74/03/09	10	10	0.410	0.200	0.020	0.005	0.035
74/03/23	10	15	0.504	0.200	0.015	0.005K	0.005K
74/04/06	10	15	0.360	0.200	0.030	0.005K	0.005
74/05/05	13	40	0.152	0.100K	0.020	0.005K	0.055

K VALUE KNOWN TO BE
LESS THAN INDICATED

STORET RETRIEVAL DATE 76/03/30

182801
39 05 30.0 086 13 42.0 4
GRAVEL CR
18 7.5 STORY
T/MONROE RES 051891
ELKINSVILLE RD BRDG 1.5 MI WSW OF STORY
11EPALES 2111204
0000 FEET DEPTH CLASS 00

DATE FROM TO	TIME OF DAY	DEPTH FEET	00630 NO2&NO3 N-TOTAL MG/L	00625 TOT KJEL N MG/L	00610 NH3-N TOTAL MG/L	00671 PHOS-DIS ORTHO MG/L P	00665 PHOS-TOT MG/L P
73/06/09	15 05		0.850	0.240	0.052	0.005K	0.020
73/07/11	09 55		0.580	3.000	0.189	0.007	0.020
73/08/14	11 00		0.140	0.440	0.084	0.005K	0.030
73/09/05	14 00		0.010K	0.657	0.130	0.005K	0.030
73/10/04	13 00		0.010K	1.100	0.176	0.015	0.050
73/11/08	11 15		0.010K	0.850	0.020	0.008	
73/12/18	10 50		0.550	0.400	0.064	0.005K	0.020
74/01/16	09 45		0.390	0.300	0.040	0.008	0.035
74/02/09	11 30		0.460	0.100	0.020	0.005K	0.005K
74/02/24	13 45		0.336	0.400	0.030	0.005	0.015
74/03/09	11 10		0.370	0.100	0.020	0.005	0.045
74/03/23	10 00		0.420	0.200	0.015	0.005K	0.010
74/04/06	11 28		0.312	0.300	0.035	0.005K	0.010
74/05/05	15 00		0.116	0.200	0.015	0.005K	0.010

K VALUE KNOWN TO BE
LESS THAN INDICATED

STORET RETRIEVAL DATE 76/03/30

1828E1
39 06 30.0 086 18 46.0 4
CROOKED CR
18 7.5 ELKINSVILLE
T/MONROE RES 051891
CROOKE CREEK RD NEAR CROOKED CREEK CH
11EPALES 2111204
0000 FEET DEPTH CLASS 00

DATE FROM TO	TIME OF DAY	DEPTH FEET	00630 NO2&NO3 N-TOTAL MG/L	00625 TOT KJEL N MG/L	00610 NH3-N TOTAL MG/L	00671 PHOS-DIS ORTHO MG/L P	00665 PHOS-TOT MG/L P
73/06/09	10 20		0.126	3.200	0.069	0.005K	0.010
73/07/11	12 45		0.105	4.300	0.147	0.007	0.010
73/08/14	11 08		0.029	0.240	0.031	0.005K	0.010
73/09/05	10 40		0.017	0.220	0.026	0.005K	0.015
73/10/04	13 05		0.010K	0.400	0.042	0.005K	0.020
73/11/08	11 00		0.390	0.150	0.018	0.007	0.015
73/12/18	11 20		0.208	0.100K	0.024	0.005K	0.005K
74/01/16	10 38		0.184	0.200	0.020	0.005K	0.010
74/02/09	13 00		0.200	0.350	0.015	0.005K	0.010
74/02/24	13 10		0.140	0.400	0.015	0.005K	0.025
74/03/09	12 17		0.140	0.100K	0.010	0.005	0.030
74/03/23	15 45		0.148	0.200	0.015	0.005K	0.005
74/04/06	12 35		0.104	0.100K	0.020	0.005K	0.005K
74/05/05	09 30		0.040	0.200	0.010	0.005K	0.005K

K VALUE KNOWN TO BE
LESS THAN INDICATED

STORET RETRIEVAL DATE 76/03/30

1828F1
39 09 30.0 086 20 13.0 4
N FORK SALT CR
18 7.5 BELMONT
I/MONROE RES 051892
ST HWY 46 BRDG 1 MI NE OF BELMONT
11EPALES 2111204
0000 FEET DEPTH CLASS 00

DATE FROM TO	TIME OF DAY	DEPTH FEET	00630 NO2&NO3 N-TOTAL MG/L	00625 TOT KJEL N MG/L	00610 NH3-N TOTAL MG/L	00671 PHOS-DIS ORTHO MG/L P	00665 PHOS-TOT MG/L P
73/06/09	11 00		0.189	0.640	0.066	0.008	0.030
73/07/11	12 20		0.480	1.900	0.200	0.014	0.040
73/08/14	11 45		0.132	0.500	0.115	0.007	0.045
73/09/05	11 15		0.037	0.330	0.054	0.006	0.037
73/10/04	12 40		0.010K	0.745	0.024		0.055
73/11/08	11 00		0.014	0.500	0.016	0.052	0.085
73/12/18	11 40		0.540	0.200	0.044	0.012	0.035
74/01/16	09 45		0.730	0.400	0.024	0.005K	0.005K
	10 50		0.500	0.200	0.032	0.008	0.025
74/02/09	12 40		0.360	0.600	0.045	0.005K	0.010
74/02/24	14 20		0.240	0.700	0.020	0.010	0.045
74/03/09	11 55		0.410	0.200	0.015	0.010	0.055
74/03/23	16 00		0.384	0.400	0.020	0.005	0.020
74/04/06	12 15		0.224	0.300	0.030	0.005	0.045
74/05/05	09 10		0.132	0.100K	0.025	0.005	0.030

K VALUE KNOWN TO BE
LESS THAN INDICATED

STORET RETRIEVAL DATE 76/03/30

1828G1
39 09 30.0 086 20 16.0 4
LOWER SCHOONER CR
18 7.5 BELMONT
T/MONROE RES 051892
BANK 200 YDS E OF ST HWY 46
11EPALES 2111204
0000 FEET DEPTH CLASS 00

DATE FROM TO	TIME OF DAY	DEPTH FEET	00630 NO2&NO3 N-TOTAL MG/L	00625 TOT KJEL N MG/L	00610 NH3-N TOTAL MG/L	00671 PHOS-DIS ORTHO MG/L P	00665 PHOS-TOT MG/L P
73/06/09	10 53		0.294	2.600	0.069	0.005K	0.020
73/07/11	12 10		0.510	0.780	0.100	0.009	0.020
73/08/14	11 45		0.132	0.500	0.126	0.008	0.045
73/09/05	11 12		0.031	0.370	0.063		0.050
73/10/04	12 45		0.010K	0.750	0.023		0.060
73/11/08	11 05		0.010K	0.500	0.015	0.038	0.070
73/12/18	11 45		0.580	0.200	0.060	0.005K	0.010
74/01/16	10 55		0.480	0.100K	0.012	0.005K	0.005
74/02/09	12 35		0.410	0.300	0.030	0.005K	0.005K
74/02/24	14 10		0.240	0.600	0.065	0.005K	0.030
74/03/09	11 50		0.290	0.100	0.015	0.005	0.035
74/03/23	16 01		0.352	0.200	0.015	0.005	0.008
74/04/06	12 05		0.260	0.150	0.035	0.005K	0.010
74/05/05	09 00		0.096	0.100K	0.015	0.005K	0.010

K VALUE KNOWN TO BE
LESS THAN INDICATED

STORET RETRIEVAL DATE 76/03/30

1828H1
39 10 46.0 086 23 35.0 4
BRUMMETT CK
18 7.5 UNIONVILLE
T/MONROE RES 051892
BRUMMETT CR RD BRDG 5 MI S OF UNIONVILLE
11EPALES 2111204
0000 FEET DEPTH CLASS 00

DATE FROM TO	TIME OF DAY	DEPTH FEET	00630 NO2&NO3 N-TOTAL MG/L	00625 TOT KJEL N MG/L	00610 NH3-N TOTAL MG/L	00671 PHOS-DIS ORTHO MG/L P	00665 PHOS-TOT MG/L P
73/06/09	09 47		0.200	1.540	0.072	0.005K	0.005K
73/07/11	13 10		0.240	0.420	0.042	0.006	0.015
73/08/14	12 10		0.120	0.870	0.088	0.005K	0.020
73/09/05	10 21		0.138	1.900	0.520	0.014	
73/10/04	13 35		0.220	0.850	0.180	0.005K	0.040
73/11/08	10 30		0.108	0.300	0.055	0.020	0.025
73/12/18	11 00		0.780	0.100K	0.024	0.005K	0.005K
74/01/16	10 15		0.500	0.200	0.040	0.016	0.025
74/02/09	13 20		0.430	0.200	0.020	0.005K	0.005K
74/02/24	12 45		0.264	0.300	0.015	0.005K	0.020
74/03/09	12 40		0.330	0.100	0.010	0.005	0.037
74/03/23	15 22		0.330	0.100	0.010	0.005K	0.005K
74/04/06	12 50		0.232	0.200	0.020	0.005K	0.005K
74/05/05	09 50		0.080	0.100K	0.010	0.005K	0.005K

K VALUE KNOWN TO BE
LESS THAN INDICATED

STORET RETRIEVAL DATE 76/03/30

1828J1
39 09 50.0 086 25 10.0 4
STEPHENS CREEK
18 7.5 UNIONVILLE
T/MONROE RES 051892
ST HWY 46 BRDG 3 MI E OF BLOOMINGTON
11EPALES 2111204
0000 FEET DEPTH CLASS 00

DATE FROM TO	TIME OF DAY	DEPTH FEET	00630 NO2&NO3 N-TOTAL MG/L	00625 TOT KJEL N MG/L	00610 NH3-N TOTAL MG/L	00671 PHOS-DIS ORTHO MG/L P	00665 PHOS-TOT MG/L P
73/06/09	09	15	0.400	2.800	0.088	0.005K	0.010
73/07/11	13	25	0.930	0.770	0.084	0.011	0.015
73/08/14	11	45	0.660	0.710	0.060	0.005K	0.025
73/09/05	10	10	1.500	0.560	0.100	0.005K	0.025
73/10/04	13	45	1.640	0.120	0.050	0.005K	0.015
73/11/08	10	20	1.200	0.100K	0.020	0.008	0.020
73/12/18	10	50	0.792	0.100	0.036	0.005K	0.005K
74/01/16	10	05	0.690	0.700	0.044	0.008	0.010
74/02/09	13	30	0.616	0.500	0.020	0.005K	0.005K
74/02/24	13	06	0.440	0.400	0.020	0.005K	0.022
74/03/09	12	50	0.588	0.100K	0.005K	0.005	0.030
74/03/23	15	10	0.560	0.100	0.005	0.005K	0.005K
74/04/06	13	00	0.360	0.300	0.035	0.005K	0.005
74/05/05	10	05	0.168	0.100K	0.015	0.005	0.005

K VALUE KNOWN TO BE
LESS THAN INDICATED

STORET RETRIEVAL DATE 76/03/30

1828K1
39 06 55.0 086 28 12.0 4
MOORE CREEK
18 7.5 ALLEN CREEK
T/MONROE RES 051891
MOORE CR RD BRDG 1 MI SE MT CALVARY CH
11EPALES 2111204
0000 FEET DEPTH CLASS 00

DATE FROM TO	TIME OF DAY	DEPTH FEET	00630 NO2&NO3 N-TOTAL MG/L	00625 TOT KJEL N MG/L	00610 NH3-N TOTAL MG/L	00671 PHOS-DIS ORTHO MG/L P	00665 PHOS-TOT MG/L P
73/06/09	11	23	0.089	1.260	0.064	0.005K	0.040
73/07/11	14	40	0.231	1.050	0.068	0.005K	0.020
73/08/14	10	30	0.027	0.800	0.027	0.005K	0.025
73/09/05	09	51	0.010K	0.400	0.016	0.005K	0.015
73/10/04	14	02	0.031	0.420	0.025	0.005K	0.015
73/11/08	11	55	0.076	0.100K	0.016	0.005K	0.005K
73/12/18	10	20	0.690	0.100	0.024	0.005K	0.005K
74/01/16	09	15	0.168	0.300	0.044	0.005K	0.010
74/02/09	14	45	0.570	0.200	0.020	0.005K	0.005K
74/02/24	15	50	0.420	0.200	0.015	0.005K	0.020
74/03/09	14	40	0.530	0.100	0.005K	0.005K	0.025
74/03/23	14	50	0.430	0.200	0.005	0.005K	0.005K
74/04/06	13	55	0.368	0.100	0.025	0.005K	0.005K
74/05/05	10	30	0.168	0.100K	0.015	0.005K	0.005K

K VALUE KNOWN TO BE
LESS THAN INDICATED

STORET RETRIEVAL DATE 76/03/30

182821 PD182821 P000280
39 02 55.0 086 26 00.0 4
RANSBURG BSA
18 7.5 ALLEN CREEK
D/MONROE RESERVOIR 051891
MONROE RESERVOIR
11EPALES 2141204
0000 FEET DEPTH CLASS 00

DATE FROM TO	TIME OF DAY	DEPTH FEET	00630 NO2&NO3 N-TOTAL MG/L	00625 TOT KJEL N MG/L	00610 NH3-N TOTAL MG/L	00671 PHOS-DIS ORTHO MG/L P	00665 PHOS-TOT MG/L P	50051 FLOW RATE INST MGD	50053 CONDUIT FLOW-MGD MONTHLY
73/06/05	09 30		0.030	4.400	0.210	0.138	1.100		
73/07/09	14 00		0.030	5.400	0.200	0.087	0.480		0.015
73/08/06	12 00		0.110	4.600	0.210	0.570	1.200		

STORET RETRIEVAL DATE 76/03/30

182831 P0182831 P000560
39 01 13.0 086 27 07.0 4
HARDIN RIDGE
18 7.5 ALLENS CREEK
D/MONROE RESERVOIR 051891
MONROE RESERVOIR
11EPALES 2141204
0000 FEET DEPTH CLASS 00

DATE FROM TO	TIME OF DAY	DEPTH FEET	00630 NO2&NO3 N-TOTAL MG/L	00625 TOT KJEL N MG/L	00610 NH3-N TOTAL MG/L	00671 PHOS-DIS ORTHO MG/L P	00665 PHOS-TOT MG/L P	50051 FLOW RATE INST MGD	50053 CONDUIT FLOW-MGD MONTHLY
73/07/05	09	00							
CP(T)-			4.300	0.750	0.070		0.120	0.030	0.018
73/07/05	16	00							
73/08/06	11	00							
CP(T)-			2.100	0.240	0.087		0.045	0.057	0.028
73/08/06	16	00							
73/09/11	10	00							
CP(T)-			3.600	0.530	0.220	0.086	0.086	0.058	0.008
73/09/11	16	00							
73/10/24	10	00							
CP(T)-			0.570	0.250	0.053	0.110	0.130	0.058	0.074
73/10/24	16	00							

STORET RETRIEVAL DATE 76/03/30

182841 AS182841 P002053
39 01 00.0 086 29 00.0 4
FAIRFAX
18 7.5 ALLENS CREEK
D/MONROE RESERVOIR 051891
MONROE RESERVOIR
11EPALES 2141204
0000 FEET DEPTH CLASS 00

DATE FROM TO	TIME OF DAY	DEPTH FEET	00630 NO2&NO3 N-TOTAL MG/L	00625 TOT KJEL N MG/L	00610 NH3-N TOTAL MG/L	00671 PHOS-DIS ORTHO MG/L P	00665 PHOS-TOT MG/L P	50051 FLOW RATE INST MGD	50053 CONDUIT FLOW-MGD MONTHLY
73/06/12	13 00		0.230	13.800	0.260	2.900	4.800		
73/07/02	11 00		0.040	5.600	0.280	2.800	3.700		
73/08/15	11 00		0.032	21.000	4.500	6.500			
73/09/06	09 00		0.092	21.000		6.440	7.400		
73/10/04	09 00		0.050	31.500	11.000	3.000	5.800		
73/11/08	09 00		0.050	18.500	6.200	6.400	8.100		
74/03/15	08 45		0.040	1.700			1.930		
74/04/04	09 40		1.520	7.700	0.160	1.350	2.400		
74/05/03	09 30		0.080	4.900	1.050	1.400	1.900		
74/06/03	08 45		0.200	17.000	1.550	2.600	4.300		
74/07/08	09 00		0.120	21.000	4.000	4.600	5.400		
74/08/01	09 00		0.040	40.000	13.500	5.400	8.200		
74/09/03	13 45		0.040	6.500	15.800	6.000	0.990		

STORET RETRIEVAL DATE 76/03/30

182851 TF182851 P002200
39 05 00.0 086 26 10.0 4
PAYNETOWN
18 7.5 ALLENS CREEK
D/MONROE RESERVOIR 051891
MONROE RESERVOIR
11EPALES 2141204
0000 FEET DEPTH CLASS 00

DATE FROM TO	TIME OF DAY	DEPTH FEET	00630 NO2&NO3 N-TOTAL MG/L	00625 TOT KJEL N MG/L	00610 NH3-N TOTAL MG/L	00671 PHOS-DIS ORTHO MG/L P	00665 PHOS-TOT MG/L P	50051 FLOW RATE INST MGD	50053 CONDUIT FLOW-MGD MONTHLY
73/06/12	09 00		1.470	5.200	2.500	1.900	2.000		
73/07/02	13 30		4.900	4.250	1.600	2.300	2.300		
73/08/15	09 00		15.400	21.000	9.400		2.600		
73/09/04	09 00		16.000	8.000		6.400	7.100		
73/10/04	10 00		7.100	25.000	14.000	7.400	7.700		
74/05/03	15 00		0.040	2.900	0.130	0.650	1.100		
74/06/03	11 15		5.880	8.000	2.100	1.800	2.500		
74/07/08	11 00		20.000	17.000	13.250	4.900	4.900		
74/08/09	10 45		10.000	19.000	10.000	6.800	7.350		
74/09/04	09 45		11.800	21.500	15.000	6.800	6.800		

STORET RETRIEVAL DATE 76/03/30

1828AA AS1828AA
39 12 15.0 086 15 18.0 4
NASHVILLE
18 7.5 BELMONT
T/MONROE RESERVOIR 051892
SALT CREEK
11EPALES 2141204
0000 FEET DEPTH CLASS 00

DATE FROM TO	TIME OF DAY	DEPTH FEET	00630 NO2&NO3 N-TOTAL MG/L	00625 TOT KJEL N MG/L	00610 NH3-N TOTAL MG/L	00671 PHOS-DIS ORTHO MG/L P	00665 PHOS-TOT MG/L P	50051 FLOW RATE INST MGD	50053 CONDUIT FLOW-MGD MONTHLY
73/09/06	09 00		0.200	40.000	6.100	8.600		0.150	
73/10/11	09 00		0.020	43.000	8.600	9.500	14.850	0.150	0.150
73/11/08	09 00		0.110	37.000	6.600	7.000	15.700	0.150	0.150
73/12/11	10 00		0.200	22.000	2.300	2.300	7.400	0.150	0.150
74/01/12	13 00		0.240	6.900	0.750	2.520	4.400	0.150	0.150
74/02/13	15 30		0.560	22.000	2.000	2.900	7.300	0.150	0.150
74/03/13	10 00		0.040	8.000			2.800	0.150	0.150